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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,922	08/04/2003	Moungi G. Bawendi	14952.0274 C1 D1/MIT 8096	4946
27890	7590	02/23/2010	EXAMINER	
STEPTOE & JOHNSON LLP 1330 CONNECTICUT AVENUE, N.W. WASHINGTON, DC 20036			STEELE, AMBER D	
		ART UNIT	PAPER NUMBER	
		1639		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/632,922	Applicant(s) BAWENDI ET AL.
	Examiner AMBER D. STEELE	Art Unit 1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 October 2009.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-3, 12-13, 26-27, 31-33, and 37-39 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-3, 12, 13, 26, 27, 31-33 and 37-39 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 04 August 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> <i>Notice of Draftsperson's Patent Drawing Review (PTO-544)</i> | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

1. Claims 1-39 were originally filed on August 4, 2003.

The amendment to the claims received on April 27, 2006 amended claims 1, 26, and 37.

The amendment to the claims received on October 17, 2006 amended claims 1, 26, and 37 and canceled claims 4-11, 14-25, 28-30, and 34-36.

The amendment to the claims received on December 4, 2007 amended claims 1, 26, and 37.

The amendment to the claims received on June 19, 2008 changed the status identifiers only.

The amendment to the claims received on March 26, 2009 amended claims 1 and 26.

Claims 1-3, 12-13, 26-27, 31-33, and 37-39 are currently pending and under consideration.

Priority

2. The present application claims status as a DIV of 09/397,432 filed September 17, 1999 (now U.S. Patent 6,602,671) which is a CIP of 09/160,458 filed September 24, 1998 (now U.S. Patent 6,617,583) and claims benefit of 60/101,046 filed September 18, 1998.

3. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 121 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application). The disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

The disclosure of the prior-filed applications, application 09/160,458 and provisional application 60/101,046 fail to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. Neither U.S. application 09/160,458 nor provisional application 60/101,046 teach alloys. Therefore, the priority date for the presently claimed inventions is September 17, 1999 (i.e. filing date of 09/397,432).

Invention as Claimed

4. A library of compounds wherein each compound in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal comprises a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, or an alloy of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, or Pb and variations thereof.

Maintained Rejections

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-3, 12-13, 26-27, 31-33, and 37-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. One of skill in the art would not be able to determine the scope of the presently claimed invention. For example, independent claims 1, 26, and 37 require “a library of compounds wherein each compound in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission”. Is each library member associated with more than one semiconductor nanocrystal wherein each semiconductor nanocrystal has distinct characteristic spectral emission (i.e. each library member has a distinct characteristic spectral emission) or is each library member associated with one semiconductor nanocrystal with one distinct characteristic spectral emission (i.e. first spectral emission) and also with at least one other semiconductor nanocrystal with a distinct characteristic spectral emission different from the first spectral emission. See Figure 2 of the present specification. Furthermore, it is not clear if the support as presently claimed includes semiconductor nanocrystals or not (i.e. are Quantum dots both the support and semiconductor or is the support a separate structure).

Arguments and Response

7. Applicants' arguments directed to the rejection under 35 USC 112, second paragraph (indefinite), for claims 1-3, 12-13, 26-27, 31-33, and 37-39 were considered but are not persuasive for the following reasons.

Applicants contend that each library member is associated with more than one population of semiconductor nanocrystals wherin each population of semiconductor nanocrystals have a distinct characteristic spectral emission and that the semiconductor nanocrystals are associated with the support.

Applicants' arguments are not convincing since the present claim language is indefinite (i.e. explanation of record has not clarified the present claim language).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 3, 12, 13, 26, 27, 32, 33, 37, and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Frankel U.S. Patent 6,096,496 filed June 19, 1997.

For present claims 1, 3, 26, 32, 37, and 39, Frankel teaches combinatorial chemistry library synthesis utilizing tagged beads bound to peptides, nucleotides, and small organic molecules wherin the tag can be semiconductor nanocrystals including Group III-V particularly

GaAs which emits light (please refer to the entire specification particularly abstract; columns 1, 5, 8, 11, 14-17, 21-22, 32).

For present claims 12 and 33, Frankel teaches beads made of cellulose, glass, pore-glass, resin, silica, and polystyrene (please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; columns 13-17).

For present claims 13 and 27, Frankel teaches polypeptides (please refer to the entire specification particularly column 1, lines 19-37; column 4, lines 8-20).

Therefore, the presently claimed invention is anticipated by the teachings of Frankel.

Arguments and Response

10. Applicants' arguments directed to the rejection under 35 USC 102 (e) as being anticipated by Frankel for claims 1, 3, 12-13, 26-27, 32-33, 37, and 39 were considered but are not persuasive for the following reasons.

Applicants contend that Frankel does not teach semiconductor nanocrystals. In addition, applicants contend that Frankel does not teach that the substrate is first associated with a support and the support is associated with more than one population of semiconductor nanocrystals.

Applicants' arguments are not convincing since the teachings of Frankel anticipates the library of compounds of the instant claims. Frankel teaches a bead (100) surrounding a substrate (190) with ID tags (120) which may be encapsulated (125) and comprises molecular anchoring sites (130a-c) with oligomeric compounds attached (165a-c) directly associated with the bead (please refer to the entire specification particularly Figures 1A and 1B; column 9, lines 59-64; column 13, lines 7-67). Additionally, Frankel teaches that the bead can be made of cellulose, glass, pore-glass, resin, silica (i.e. Group IV semiconductor nanocrystal), polystyrene, the

material of the identification tagging apparatus (i.e. semiconductor nanocrystal; Si, Group IV semiconductor nanocrystal; GaAs; Group III-V semiconductor nanocrystal; please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; column 13, lines 1-6). In addition, Frankel teaches multiple ID tags forming a distinct combination code for each bead (i.e. multiple spectral emissions) including various semiconductor nanocrystals (i.e. Si, GaAs, alloys of GaAs, AlInGaP, InGaP, InGaAlP, AlAs, AlGaAs, InSn, Group III-V; please refer to column 5, lines 32-67; column 8, lines 4-32; column 11, lines 44-67; column 12, lines 1-56; column 14, lines 39-44; column 15, lines 1-31; column 16, lines 16-52; column 21, lines 35-67; column 22; column 29, lines 52-67; columns 30-32). Moreover, it is noted that present claims 2, 31, and 38 claim that the first and second semiconductor material are the same or different (i.e. same semiconductor can have distinct characteristic spectral emissions). It is noted that the limitations "more than one population of semiconductor nanocrystals each population having a distinct characteristic spectral emission" equates to more than one molecule of semiconductor nanocrystal associated with each support.

Applicants point to column 18, lines 10-25 of Frankel and state that this section shows that Frankel does not teach nanocrystals. However, the tag systems described are semiconductor nanocrystals (i.e. nanoparticles; see column 18, lines 28-32).

Applicants' second argument appears to rely on the method of making the library of compounds. However, the present invention is drawn to a product (i.e. a library of compounds).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-3, 12-13, 26-27, 31-33, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frankel U.S. Patent 6,096,496 filed June 19, 1997 and Dabbousi et al., 1997, (CdSe)ZnS Core-Shell Quantum Dots: Synthesis and Characterization of a Size Series of Highly Luminescent Nanocrystallites, J. Phys. Chem. B, 101: 9463-9475.

For present claims 1, 3, 26, 32, 37, and 39, Frankel teaches combinatorial chemistry library synthesis utilizing tagged beads bound to peptides, nucleotides, and small organic molecules wherein the tag can be semiconductor nanocrystals including Group III-V particularly GaAs which emits light (please refer to the entire specification particularly abstract; columns 1, 5, 8, 11, 14-17, 21-22, 32).

For present claims 12 and 33, Frankel teaches beads made of cellulose, glass, pore-glass, resin, silica, and polystyrene (please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; columns 13-17).

For present claims 13 and 27, Frankel teaches polypeptides (please refer to the entire specification particularly column 1, lines 19-37; column 4, lines 8-20).

However, Frankel does not teach a core-shell structure.

For present claims 2, 31, and 38, Dabbousi et al. teach core-shell quantum dots wherein the core includes CdSe and the shell includes ZnS wherein different colors can be produced

based on the thickness of the core and/or shell (please refer to the entire reference particularly the abstract; Experimental Section).

The claim would have been obvious because the substitution of one known element (semiconductor tag without core-shell structure taught by Frankel) for another (i.e. core-shell structure taught by Dabbousi et al.) would have yielded predictable results (i.e. each library member would have a different tag with a core-shell structure) to one of ordinary skill in the art at the time of the invention. See *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

Arguments and Response

13. Applicants' arguments directed to the rejection under 35 USC 103 (a) as being unpatentable over Frankel and Dabbousi et al. for claims 1-3, 12-13, 26-27, 31-33, and 37-39 were considered but are not persuasive for the following reasons.

Applicants contend that Frankel does not teach semiconductor nanocrystals. In addition, applicants contend that Frankel does not teach that the substrate is first associated with a support and the support is associated with more than one population of semiconductor nanocrystals. Applicants also contend that the examiner is utilizing hindsight reasoning.

Applicants' arguments are not convincing since the teachings of Frankel and Dabbousi et al. render the product of the instant claims *prima facie* obvious.

Frankel teaches a bead (100) surrounding a substrate (190) with ID tags (120) which may be encapsulated (125) and comprises molecular anchoring sites (130a-c) with oligomeric compounds attached (165a-c) directly associated with the bead (please refer to the entire specification particularly Figures 1A and 1B; column 9, lines 59-64; column 13, lines 7-67).

Additionally, Frankel teaches that the bead can be made of cellulose, glass, pore-glass, resin, silica (i.e. Group IV semiconductor nanocrystal), polystyrene, the material of the identification tagging apparatus (i.e. semiconductor nanocrystal; Si, Group IV semiconductor nanocrystal; GaAs; Group III-V semiconductor nanocrystal; please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; column 13, lines 1-6). In addition, Frankel teaches multiple ID tags forming a distinct combination code for each bead (i.e. multiple spectral emissions) including various semiconductor nanocrystals (i.e. Si, GaAs, alloys of GaAs, AlInGaP, InGaP, InGaAlP, AlAs, AlGaAs, InSn, Group III-V; please refer to column 5, lines 32-67; column 8, lines 4-32; column 11, lines 44-67; column 12, lines 1-56; column 14, lines 39-44; column 15, lines 1-31; column 16, lines 16-52; column 21, lines 35-67; column 22; column 29, lines 52-67; columns 30-32). Moreover, it is noted that present claims 2, 31, and 38 claim that the first and second semiconductor material are the same or different (i.e. same semiconductor can have distinct characteristic spectral emissions). It is noted that the limitations “more than one population of semiconductor nanocrystals each population having a distinct characteristic spectral emission” equates to more than one molecule of semiconductor nanocrystal associated with each support.

Applicants point to column 18, lines 10-25 of Frankel and state that this section shows that Frankel does not teach nanocrystals. However, the tag systems described are semiconductor nanocrystals (i.e. nanoparticles; see column 18, lines 28-32).

Applicants’ second argument appears to rely on the method of making the library of compounds. However, the present invention is drawn to a product (i.e. a library of compounds).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

14. Claims 1-3, 12-13, 26-27, 31-33, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frankel U.S. Patent 6,096,496 filed June 19, 1997 and Weiss et al. U.S. Patent 6,927,069 (effective filing date of July 8, 1999 or September 25, 1997).

For present claims 1, 3, 26, 32, 37, and 39, Frankel teaches combinatorial chemistry library synthesis utilizing tagged beads bound to peptides, nucleotides, and small organic molecules wherein the tag can be semiconductor nanocrystals including Group III-V particularly GaAs which emits light (please refer to the entire specification particularly abstract; columns 1, 5, 8, 11, 14-17, 21-22, 32).

For present claims 12 and 33, Frankel teaches beads made of cellulose, glass, pore-glass, resin, silica, and polystyrene (please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; columns 13-17).

For present claims 13 and 27, Frankel teaches polypeptides (please refer to the entire specification particularly column 1, lines 19-37; column 4, lines 8-20).

However, Frankel does not teach a core-shell structure.

For present claims 2, 31, and 38, Weiss et al. teach core-shell structures (please refer to the entire specification particularly the abstract and columns 4-6).

The claim would have been obvious because the substitution of one known element (semiconductor tag without core-shell structure taught by Frankel) for another (i.e. core-shell structure taught by Weiss et al.) would have yielded predictable results (i.e. each library member would have a different tag with a core-shell structure) to one of ordinary skill in the art at the time of the invention. See *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

Arguments and Response

15. Applicants' arguments directed to the rejection under 35 USC 103 (a) as being unpatentable over Frankel and Weiss et al. for claims 1-3, 12-13, 26-27, 31-33, and 37-39 were considered but are not persuasive for the following reasons.

Applicants contend that Frankel does not teach semiconductor nanocrystals. In addition, applicants contend that Frankel does not teach that the substrate is first associated with a support and the support is associated with more than one population of semiconductor nanocrystals.

Applicants' arguments are not convincing since the teachings of Frankel and Weiss et al. render the product of the instant claims *prima facie* obvious.

Frankel teaches a bead (100) surrounding a substrate (190) with ID tags (120) which may be encapsulated (125) and comprises molecular anchoring sites (130a-c) with oligomeric compounds attached (165a-c) directly associated with the bead (please refer to the entire specification particularly Figures 1A and 1B; column 9, lines 59-64; column 13, lines 7-67). Additionally, Frankel teaches that the bead can be made of cellulose, glass, pore-glass, resin, silica (i.e. Group IV semiconductor nanocrystal), polystyrene, the material of the identification

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tagging apparatus (i.e. semiconductor nanocrystal; Si, Group IV semiconductor nanocrystal; GaAs; Group III-V semiconductor nanocrystal; please refer to the entire specification particularly column 11, lines 26-43; column 12, lines 57-67; column 13, lines 1-6). In addition, Frankel teaches multiple ID tags forming a distinct combination code for each bead (i.e. multiple spectral emissions) including various semiconductor nanocrystals (i.e. Si, GaAs, alloys of GaAs, AlInGaP, InGaP, InGaAlP, AlAs, AlGaAs, InSn, Group III-V; please refer to column 5, lines 32-67; column 8, lines 4-32; column 11, lines 44-67; column 12, lines 1-56; column 14, lines 39-44; column 15, lines 1-31; column 16, lines 16-52; column 21, lines 35-67; column 22; column 29, lines 52-67; columns 30-32). Moreover, it is noted that present claims 2, 31, and 38 claim that the first and second semiconductor material are the same or different (i.e. same semiconductor can have distinct characteristic spectral emissions). It is noted that the limitations “more than one population of semiconductor nanocrystals each population having a distinct characteristic spectral emission” equates to more than one molecule of semiconductor nanocrystal associated with each support.

Applicants point to column 18, lines 10-25 of Frankel and state that this section shows that Frankel does not teach nanocrystals. However, the tag systems described are semiconductor nanocrystals (i.e. nanoparticles; see column 18, lines 28-32).

Applicants' second argument appears to rely on the method of making the library of compounds. However, the present invention is drawn to a product (i.e. a library of compounds).

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Future Communications

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AMBER D. STEELE whose telephone number is (571)272-5538. The examiner can normally be reached on Monday through Friday 9:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low can be reached on 571-272-0951. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Amber D. Steele/
Primary Examiner, Art Unit 1639